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10/583,339

10/02/2006

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EXAMINER

CALANDRA, ANTHONY J

ART UNIT

PAPER NUMBER

1791

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,339	Applicant(s) BUCHERT ET AL.	
	Examiner ANTHONY J. CALANDRA	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :6/20/2007, 10/02/2006, 6/19/2006.

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Detailed Office Action

1. The communication dated 6/19/2008 has been entered and fully considered.
2. Claims 1-22 are currently pending.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-22 are provisionally rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claims 3, 8, 15, 16-25, 29-31 of copending

Application No. 10/583,712. Although the conflicting claims are not identical, they are not

patentably distinct from each other because the instant claimed application discloses a process

wherein a lignocellulosic fiber is modified through oxidation, a modifying agent is bonded to it

and then a hydrophobic polymer is contacted to it. The copending application also oxidizes a

lignocellulosic fiber and bonds a modifying agent to it. Subsequent to this step a functional

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agent with properties foreign to the fiber is bonded to the functional surface. A hydrophobic polymer is a functional agent with a property foreign to lignocellulosic fibers.

Instant claim 1 see copending claim 16.

Instant claim 2 see copending claim 17.

Instant claim 3 see copending claim 3.

Instant claim 4 see copending claim 25.

Instant claim 5 and 6 see copending claim 8.

Instant claim 7 see copending claim 18.

Instant claim 8 and 9 see copending claims 15 and 18

As for instant claim 10, eugenol is a well known UV absorber as claimed by copending claim 11.

As for instant claim 11 it would have been obvious to disperse the agent in the cellulose mixture to obtain more uniform bonding.

Instant claim 12 and 13 see copending claims 19 and 20.

Instant claim 14 see copending claim 25.

Instant claim 15, 16 and 17 see copending claims 20, 21, and 22.

Instant claim 18 and 19 see copending claims 23-24.

Instant claim 20 see copending claim 29.

Instant claim 21 see copending claim 30.

Instant claim 22 see copending claim 31.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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5. Claims 1-9 and 11-22 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3-9, 16-19, 21-26 of copending Application No. 10/583849. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claimed application discloses a process wherein a lignocellulosic fiber is modified through oxidation, a modifying agent is bonded to it and then a hydrophobic polymer is contacted to it. The copending application also oxidizes a lignocellulosic fiber and bonds a modifying agent to it. Subsequent to this step a polymer agent with conductive properties is bonded to the functional surface. A polymer can simultaneously be conductive and be hydrophobic, as these properties are not mutually exclusive.

Instant claim 1 see copending claim 1.

Instant claim 2 see copending claim 4.

Instant claim 3 see copending claim 3.

Instant claim 4 see copending claim 5.

Instant claim 5 and 6 see copending claim 6.

Instant claim 7 see copending claim 9.

Instant claim 8 and 9 see copending claims 7- 9,

As for instant claim 11 it would have been obvious to disperse the agent in the cellulose mixture to obtain more uniform bonding.

Instant claim 12 and 13 see copending claim 16.

Instant claim 14 see copending claim 5.

Instant claim 15, 16 and 17 see copending claims 17, 18, and 19.

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Instant claim 18 and 19 see copending claims 21 and 22.

Instant claim 20 see copending claims 21-24.

Instant claim 21 see copending claim 25.

Instant claim 22 see copending claim 26.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

6. Claims 1-4, 7-9 and 11-22 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2, 3, 7, 8 of copending Application No. 10/583711. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claimed application discloses a process wherein a lignocellulosic fiber is modified through oxidation, a modifying agent is bonded to it and then a hydrophobic polymer is contacted to it. The copending application also oxidizes a lignocellulosic fiber and bonds a modifying agent to it. Subsequent to this step a signaling agent can be bonded to it. The hydroscopic polymer of the instant application imparts a property that is capable of being a signaling agent.

Instant claim 1 see copending claim 2.

Instant claim 2 see copending claim 3.

Instant claim 3 see copending claim 4.

Instant claim 4 see copending claim 19.

Instant claim 7 see copending claim 11.

Instant claim 8 and 9 see copending claims 8 and 10

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As for instant claim 11 it would have been obvious to disperse the agent in the cellulose mixture to obtain more uniform bonding.

Instant claim 12 and 13 see copending claims 12 and 13.

Instant claim 14 see copending claim 19.

Instant claim 15, 16 and 17 see copending claims 13, 14, and 15.

Instant claim 18 and 19 see copending claims 17 and 18.

Instant claim 20 see copending claim 16.

Instant claim 21 see copending claim 12.

Instant claim 22 the copending claims are at least carried out sequentially or simultaneously.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claim 21 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the

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specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claim states that radiation capable of oxidizing the fibrous material should be used however, neither the specification nor the claim state in any manner how much radiation is needed, where and when the radiation is used on the fibrous material (low consistency, medium consistency, or once a sheet has been formed), and finally it is not clear whether the radiation requires or doesn't require the other oxidizing agents (the enzymes, peroxides etcetera).

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claim 6, 7, 10, 11, 17, 18 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Regarding claim 6, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

13. In claim 7, applicant claims derivatives of various functional groups. It is not clear to the examiner what changes can or cannot be made to the functional group to be considered a derivative or a completely different functional group. Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant.

14. In claim 10, applicant claims 'derivatives of' eugenol, isoeugenol and gallate. It is not clear to the examiner what changes can or cannot be made to the compound to be alkyl considered a derivative or a completely compound. For example Ferulic acid could be

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considered a derivative of eugenol as it has an additional carbonyl group attached to the end of the chain; it is unclear whether this compound fits the applicant's definition of derivative.

Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant.

15. Regarding claim 11, the phrase "or such" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

16. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 17 recites the broad recitation 1-100,000 nkat/g, and the claim also recites 10-500 nkat/g which is the narrower statement of the range/limitation. The claim also states the limitation .00001 to 10 mg of enzyme per gram of dry matter which is in fact a third range.

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17. In claim 17, the applicant claims an enzyme dosage nkat/g (nanokatal/g) which the examiner has interpreted as an enzyme activity on pulp. However, the applicant does not state what the defined assay conditions this enzyme activity is measured. At different temperatures, pH's, and substrate being oxidized an enzyme can have different activities. Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant.

18. Regarding claim 18, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

19. Claim 21 provides for the use of radiation, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 21 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

22. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

23. Claim 1-22 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,187,136 PEDERSEN et al., hereinafter PEDERSEN in view of WIPO publication WO 00/78818 A1 BETREMIEUX et al., hereinafter BETREMIEUX, as evidenced by Handbook for Pulp and Paper Technologists by SMOOK, hereinafter SMOOK, or in the alternative, BETREMIEUX in view PEDERSON as evidenced by SMOOK.

Examiner refers to U.S. Patent 6,830,657 BETREMIEUX as the English Language equivalent of the foreign patent document.

As for claim 1, PEDERSEN discloses activating fibers with an oxidizing agent capable of activating the phenolic groups [abstract, column 8 lines 25-37]. PEDERSEN further discloses attaching to the oxidized sites a modifying agent such as Ferulic acid [column 5 lines 20-36 and column 8 lines 55-60]. PEDERSON discloses that modified lignocellulose has a higher electronegative charge [column 8 line 63- column 9 lines 3 and column 10 lines 55-60] and this higher negative charge allows cationic (positively charged) polymers to bind to the more negatively charged pulp more effectively. PEDERSON discloses cationic wet strength agents such as cationic starch and cationic polyacrylates [column 9 lines 4-9]. PEDERSON discloses that by performing this treatment the lignocellulose is able to retain a larger amount of the cationic polymer while using less of the cationic polymer [column 3 lines 25-32]. PEDERSON discloses strengthening agents but does not disclose hydrophobic polymers. It is well known in the art that paper making uses sizing agents, or hydrophobic agents, to prevent the wetting of paper. Sizing is a common and well known process in the art of paper making as evidenced by SMOOK [pg. 220 Table 15-1 pg. 223 column 2 – pg. 224 column 1]. BETREMIEUX discloses the use of cationic hydrophobic polymers in for treating and sizing paper both internally and externally [abstract and column 4 lines 60-62]. BETREMIEUX discloses that paper fibers are anionic and that anionic fibers do not attract other anionic components well, therefore cationic components would be attracted to the fibers [column 1 line 65 – column 2 line 7]. At the time of the invention it would have been obvious to a person of ordinary skill in the art to size the paper of PEDERSON as disclosed by BETREMIUEX. The person of ordinary skill in the art would be motivated to apply this common and well known sizing technique to produce papers with a

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good resistance to water and penetration of ink [column 7 lines 5-10 and column 9 lines 1-7]. A person of ordinary skill in the art would expect that the anionic charge added by the Ferulic acid would allow a cationic sizing (hydrophobic) agent such the cationic hydrophobic polymers of BETREMIEUX to be better maintained in the sheet (higher concentration of negative charge attracts a positive charge).

In the alternative, BETREMIEUX discloses a sizing technique using cationic sizes that can be added internally or externally [abstract and column 4 lines 60-62]. BETREMIEUX discloses that paper fibers are anionic and that anionic fibers do not attract other anionic components well, therefore cationic components would be attracted to the fibers [column 1 line 65 – column 2 line 7]. BETREMIEUX does not disclose treating the fibers by oxidation and adding a modifying agent. PEDERSEN discloses activating fibers with an oxidizing agent capable of activating the phenolic groups [abstract, column 8 lines 25-37]. PEDERSEN further discloses attaching to the oxidized sites a modifying agent such as Ferulic acid [column 5 lines 20-36 and column 8 lines 55-60]. PEDERSON discloses that modified lignocellulose has a higher electronegative charge [column 8 line 63- column 9 lines 3 and column 10 lines 55-60] and this higher negative charge allows cationic (positively charged) polymers to bind to the more negatively charged pulp more effectively.

At the time of the invention it would have been obvious to apply the modification of PEDERSON to the paper sizing process of BETREMIEUX. A person of ordinary skill would be motivated to do so because the additional anionic charge of PEDERSON would allow for greater bonding of the cationic polymer of BETREMIEUX resulting in cost savings. PEDERSON discloses that by increasing anionic charge cationic polymers are bettered bound to the fibers

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[column 8 line 63- column 9 lines 3 and column 10 lines 55-60] which increases retention [column 3 lines 25-32].

As for claim 2, 3, 12, and 13, PEDERSEN discloses the reaction of fiber with an enzyme capable of catalyzing oxidation of phenolic structures [column 8 lines 25-30]. An enzyme is a type organic catalyst. PEDERSEN discloses the modifying agent of Ferulic acid which is grafted onto the pulp [column 10 lines 60-65]. Ferulic acid is a chemical which is capable of providing the lignocellulose fiber material with properties reducing the susceptibility to yellowing. PEDERSEN discloses that the enzymatic oxidation process occurs together and that the Ferulic acid is grafted onto the material, therefore the modifying agent is activated [column 8 lines 15-25 and column 10 lines 60-65].

As for claim 4 and 14, PEDERSEN discloses the range of 0.1 to 40% consistency [column 5 line 5-7] encompassed by the instant claimed range.

As for claim 5-9, PEDERSEN discloses that Ferulic acid, the modifying agent, is grafted onto the material, [column 10 lines 60-65]. Ferulic acid is an unsaturated carboxylic acid with a chain of over 2 carbon atoms that has a carboxyl functional group, a phenolic group and a hydroxyl functional group.

As for claim 10, PEDERSON discloses phenolic derivatives of benzoic acid including hydroxybenzoic acid [column 5 lines 31-33]. PEDERSON further discloses that the phenolic ring can have one or more hydroxyl substituents on the phenol ring. Gallate is a hydroxybenzoic acid with 3 hydroxyl substituents on the phenol group. As PEDERSON discloses the genus hydroxybenzoic acid (at least 1 hydroxyl) and discloses that the phenol ring can have 1 or more hydroxyl groups it is the examiner position that it would be obvious to try the species of 3

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hydroxyl groups (gallic acid) as there are a limited number of hydroxyl groups that can be placed on a hydroxybenzoic acid (1-5 hydroxyl groups).

As for claim 11, PEDERSON discloses that the Ferulic acid is added as a solution which the examiner has interpreted as a disperse system, or dispersion [column 10 lines 25-30].

BETREMIEUX further discloses that the polymers are added as a dispersion [Title, abstract].

As for claim 15 and 16, PEDERSEN discloses laccase, oxidases and peroxidases [column 6 lines 1-36].

As for claim 17, PEDERSEN discloses 0.0001 – 10mg/g of dry matter which is the instant claimed range [column 6 lines 60-67]. The applicant claims an enzyme dosage nkat/g (nanokatal/g) which the examiner has interpreted as an enzyme activity on pulp. However, the applicant does not state what the defined assay conditions this enzyme activity is measured. At different temperatures an enzyme can have different activities. Therefore the examiner cannot determine the proper metes and bounds of patent protection desired by the applicant.

PEDERSEN discloses 0.02 LACU/g -2000 LACU/g [column 6 lines 40-47] of enzyme where an LACU is measured under disclosed conditions [column 6 lines 55-60]. Until shown otherwise the examiner has interpreted these ranges to overlap with the instant claimed ranges [since the applicant fails to define the units].

Alternatively, at the time of the invention it would have been obvious to optimize the enzyme activity on pulp [2144.05 (II) (B) Optimization of ranges and result effective variables]. PEDERSEN clearly shows enzyme activity on pulp to be a result effective variable and therefore its optimization would have been obvious to a person of ordinary skill, absence evidence of unexpected results.

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As for claim 18 and 20, PEDERSEN discloses hydrogen peroxide [column 8 lines 4-10].

As for claim 19, PEDERSEN discloses oxygen and oxygen containing gases [column 7 line 65 to column 8 line 3].

As for claim 21, it is not clear the steps or the amount of radiation emitted onto the fiber, or consistency of the fiber. As paper web/pulp are subjected to light on a paper machine, at least some light radiation (including UV) strikes the pulp/paper web capable of oxidizing a phenol group. Examiner notes peroxide with ultraviolet light forms hydroxyl radicals, an advanced oxidation process.

As for claim 22, PEDERSEN discloses that the reaction can take place simultaneously or sequentially [column 4 lines 10-35].

24. Claims 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,187,136 PEDERSEN et al., hereinafter PEDERSEN in view of WIPO publication WO 00/78818 A1 BETREMIEUX et al., hereinafter BETREMIEUX, as evidenced by Handbook for Pulp and Paper Technologists by SMOOK, hereinafter SMOOK, or in the alternative, BETREMIEUX in view PEDERSON as evidenced by SMOOK. as applied to claim 1 above, and further in view of WIPO publication WO 03/061550 A2 CALL, hereinafter CALL.

Examiner refers to U.S. Publication CALL as the English Language equivalent of the foreign patent document.

As for claim 10, PEDERSON discloses phenolic derivatives of benzoic acid including hydroxybenzoic acid [column 5 lines 31-33]. PEDERSON further discloses that the phenolic

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ring can have one or more hydroxyl substituents on the phenol ring. Gallate is a hydroxybenzoic acid with 3 hydroxyl substituents on the phenol group. As PEDERSON discloses the genus hydroxybenzoic acid (at least 1 hydroxyl) and discloses that the phenol ring can have 1 or more hydroxyl groups it is the examiner position that it would be obvious to try the species of 3 hydroxyl groups (gallic acid) as there are a limited number of hydroxyl groups that can be placed on a hydroxybenzoic acid (1-5 hydroxyl groups).

Alternatively, CALL discloses gallate derivatives [0064] which can be bound to fibers using enzyme mediated oxidation [abstract.] At the time of the invention it would have been obvious to a person of ordinary skill in the art to substitute the gallate species disclosed by CALL in the invention of PEDERSON. PEDERSON discloses the genus of hydroxybenzoic acid and discloses that more than one hydroxyl group can be added therefore suggesting species such as gallate. CALL confirms that gallate derivatives can be used in oxidation systems with fibers. Therefore, a person of ordinary skill in the art would expect the gallate derivative of CALL to work in the system as disclosed by PEDERSON.

As for claim 14, PEDERSEN discloses the range of 0.1 to 40% consistency [column 5 line 5-7] encompassed by the instant claimed range.

Conclusion

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. CALANDRA whose telephone number is (571) 270-5124. The examiner can normally be reached on Monday through Thursday, 7:30 AM-5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art Unit
1791

AJC